UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,431	02/26/2004	Shi-Wai S. Cheng	GP-300576	4757

7590 09/02/2009

CARY W. BROOKS
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER	
WARTALOWICZ, PAUL A	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
09/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/787,431	CHENG, SHI-WAI S.	
	Examiner	Art Unit	
	PAUL A. WARTALOWICZ	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-24,26-32 and 34-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-24,26-32 and 34-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 22, 23, 24, 26-32, 34-46 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Ernest teaches an open cell filter structure having a plurality of interconnected voids and not a wall flow filter that has at least one through hole cell running the longitudinal length of the wall flow filter.

However, Ernest is not relied upon to teach that the wall flow filter that has at least one through hole cell running the longitudinal length of the wall flow filter. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that there is no reason to combine Miller, Nagaoka with either Rummler or Ernest.

However, all four patents are drawn to filtering devices. Miller and Nagaoka disclose the general teaching of using multiple filters in filtering processes. Miller and Nagaoka are in the same field of endeavor (filtering) as Rummler or Ernest. Additionally, Miller and Nagaoka would have logically commended itself to an inventor's attention when considering their invention as a whole because the teaching of multiple filters in order to provide multiple effects would be applicable to Rummler and Ernest.

The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. **> "Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed. " KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1397 (2007). Thus a reference in a field different from that of applicant's endeavor may be reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her invention as a whole. MPEP 2141.01 (a) [R-6] (I).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 22, 23, 24, 26-32, 34-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernest et al. (U.S. 4426320) in view of Ernst (US 3290876).

Ernest teach an exhaust gas treatment system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 2, 3) and then through a fine filter (instant wall flow filter, col. 1, 2).

It appears the teaching in Ernest meet the limitation of the fine wall filter surrounding a portion of the catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Ernest teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Ernest meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Ernest fails to teach that an additional filter surrounds a portion of the side edge.

Ernst, however, teaches a decontamination device (col. 1) wherein gases are flowed through multiple tubes and then passed through the top and bottom of the tubes (col. 1, 2; fig. 1, #8, 12) for the purpose of providing efficient gas purification in a relatively small device (col. 3).

As Ernst that gases are flowed through tubes and then passed through perforated walls on the top and bottom of the tubes (col. 1, 2; fig. 1, #8, 12) for the

purpose of providing efficient gas purification in a relatively small device (col. 3), it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the secondary filter on the top and bottom of multiple tubes containing course filters of Ernest wherein the gas flows through the course filter and then passes through the top and bottom of the course filter chamber to the fine filter in order to provide efficient gas purification in a relatively small device.

Regarding claims 27 and 28, Ernest fails to teach wherein the wall flow filter is a single cell wall flow filter.

Ernst teaches that the tubes are surrounded by perforated walls on the top and bottom of the tube (fig. 1, #12, col. 1). These perforated walls appear to be single cell wall flow filter and the perforations appear to be through hole cells.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide perforated walls as the fine filter in Ernest because the perforated walls would be able to filter solids in the absence of a showing to the contrary.

Regarding claims 24, 32, 37, Ernst teaches an engine upstream (col. 1) connected to an exhaust line (fig. 1, #3, col. 1, 2) that is connected to a housing (fig. 1, #1, col. 1, 2) wherein the a separator has an opening through the separator for the purpose of flowing exhaust gasses through channels and then through filters (col. 1, 2, 3, fig. 1, #9, 11, 12).

As Ernst teaches an engine upstream (col. 1) connected to an exhaust line (fig. 1, #3, col. 1, 2) that is connected to a housing (fig. 1, #1, col. 1,2) wherein the a

separator has an opening through the separator for the purpose of flowing exhaust gasses through channels and through filters (col. 1,2,3, fig. 1, #9,11,12), it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a separator has an opening through the separator for the purpose of flowing exhaust gasses through the coarse filter and wall filter of Ernest (col. 1,2,3, fig. 1, #9,11,12).

Claims 22, 23, 24, 26-32, 34-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rummler et al. (U.S. 5853579) in view of Ernst (US 3290876).

Rummler teach a filter system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 31, fig. 24A) and then through a fine filter (instant wall flow filter, col. 31, fig. 24A).

It appears the teaching in Rummler meet the limitation of the fine wall filter surrounding a portion of a catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Rummler teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Rummler meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Rummler fail to teach an additional filter surrounds a portion of the side edge.

Ernst, however, teaches a decontamination device (col. 1) wherein gases are flowed through multiple tubes and then passed through the top and bottom of the tubes (col. 1, 2; fig. 1, #8, 12) for the purpose of providing efficient gas purification in a relatively small device (col. 3).

As Ernst that gases are flowed through tubes and then passed through perforated walls on the top and bottom of the tubes (col. 1, 2; fig. 1, #8, 12) for the purpose of providing efficient gas purification in a relatively small device (col. 3), it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the secondary filter on the top and bottom of multiple tubes containing course filters of Rummler wherein the gas flows through the course filter and then passes through the top and bottom of the course filter chamber to the fine filter in order to provide efficient gas purification in a relatively small device.

Regarding claims 27 and 28, Rummler fails to teach wherein the wall flow filter is a single cell wall flow filter.

Ernst teaches that the tubes are surrounded by perforated walls on the top and bottom of the tube (fig. 1, #12, col. 1). These perforated walls appear to be single cell wall flow filter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide perforated walls as the fine filter in Rummler because the perforated walls would be able to filter solids in the absence of a showing to the contrary.

Regarding claims 24, 32, 37, Ernst teaches an engine upstream (col. 1) connected to an exhaust line (fig. 1, #3, col. 1, 2) that is connected to a housing (fig. 1, #1, col. 1, 2) wherein the a separator has an opening through the separator for the purpose of flowing exhaust gasses through channels and then through filters (col. 1, 2, 3, fig. 1, #9, 11, 12).

As Ernst teaches an engine upstream (col. 1) connected to an exhaust line (fig. 1, #3, col. 1, 2) that is connected to a housing (fig. 1, #1, col. 1,2) wherein the a separator has an opening through the separator for the purpose of flowing exhaust gasses through channels and through filters (col. 1,2,3, fig. 1, #9,11,12), it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a separator has an opening through the separator for the purpose of flowing exhaust gasses through the coarse filter and wall filter of Rummler.

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rummler et al. (U.S. 5853579) in view of Ernst (US 3290876) and either one of Miller et al. (3319793) or Nagaoka (6488842).

Rummler teach a filter system as described above in claim 22.

Rummler fail to teach a plurality of filters.

Miller teaches a filter system (col. 1) wherein it is known to provide multiple filters in a housing in the filtering art (col. 1-2).

Nagaoka teach a filter system (col. 1) wherein multiple filters are disposed in a housing (fig. 1, # 2, 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide multiple filters disposed in a housing in Rummler because it is well known in the art to provide multiple filters for multiple effect and efficiency as taught by Miller and Nagaoka,.

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ernest et al. (U.S. 4426320) in view of Ernst (US 3290876) and either one of Miller et al. (3319793) or Nagaoka (6488842).

Ernest teaches an exhaust gas treatment system as taught above in claim 22.

Ernest fails to teach a plurality of filters.

Miller teaches a filter system (col. 1) wherein it is known to provide multiple filters in a housing in the filtering art (col. 1-2).

Nagaoka teach a filter system (col. 1) wherein multiple filters are disposed in a housing (fig. 1, # 2, 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide multiple filters disposed in a housing in Ernest because it is well known in the art to provide multiple filters for multiple effect and efficiency as taught by Miller and Nagaoka.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz
August 31, 2009

/Stanley Silverman/
Supervisory Patent Examiner, AU 1793